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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/586,736	06/05/2000	Yezdi Dordi	4256	7891

32588 7590 09/26/2003

APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER

LEADER, WILLIAM T

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/586,736

Applicant(s)

DORDI, YEZDI

Examiner

William T. Leader

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-39,41,42 and 50-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-39,41,42 and 50-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Receipt of the response filed on July 3, 2003, is acknowledged. Claims 40 and 43-49 have been canceled. New claims 51-57 have been submitted. Applicant has elected species II, claims 36-39, 41-42 and 50-57. Applicant argues that claims 30, 36 and 43 do not define separate species, but simply present different ways of expressing the arrangement of the anode segments described in the application. All of the pending claims will be considered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 30, 31, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodruff et al (6,497,01) in view of Ritzdorf et al (6,454,926).

3. The Woodruff et al patent is directed to electroplating apparatus with a segmented anode array. The apparatus includes an electrolyte container 10; means for supporting a workpiece, W, such as a semiconductor wafer, to be electroplated; a plurality of concentric anode segments 20; and an electrical source coupled to each of the anode segments. See figures 1, 1a and 14. As shown in figure 14 an upper

surface of each of the plurality of anode segments is in direct line of sight of the entire processing plane as determined by the position of the workpiece W.

4. Claim 1 differs from the Woodruff et al patent by reciting a plurality of electrical contacts positioning the electrolyte container and defining a processing plane. The Woodruff et al patent shows the position of workpiece W but does not show the details of the electrical connection to the workpiece. The Ritzdorf et al patent (6,454,926) is directed to a semiconductor plating system. As shown in figure 28, a plurality of electrical contact fingers 979 define a processing plane in which the wafer to be plated is positioned.

5. The prior art of record is indicative of the level of skill of one of ordinary skill in the art. It would have been obvious at the time the invention was made to have utilized a plurality of electrical contacts to define the processing plane in the apparatus of Woodruff et al because a plurality of contacts provides a good electrical connection to the workpiece as shown by Ritzdorf et al.

6. Instant claim 31 recites insulating members positionable between adjacent segments of the plurality of anode segments. Figure 5 of Woodruff shows insulating dielectric members 46 between anode segments 20.

7. Woodruff et al further disclose that the anodes segments may be placed on mounting base 140 which may be considered to be an anode support as recited in instant claim 33. The mounting base of Woodruff et al is supported on conduit 118

which may be considered to be an anode base as recited in instant claim 33. The anode support is connected to at least one of the anode segments as recited in instant claim 34.

8. Claims 32, 35-39, 41, 42 and 50-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodruff et al (6,497,01) in view of Ritzdorf et al (6,454,926) and Wang (6,391,166) as applied to claims 30, 31, 33 and 34 above, and further in view of Wang (6,391,166).

9. Claim 32 recites that a vertical distance between the anode segments and the processing plane is less than a vertical distance between the insulating members and the processing plane. Claim 35 similarly recites that the insulating members positioned between adjacent segments of the plurality of anode segments are below the upper surface of the plurality of anode segments. The Wang patent is directed to apparatus for electroplating onto a workpiece such as a semiconductor wafer. The apparatus includes a plurality of concentric anode segments shown as rings 1-3 in figure 3. Cylindrical walls 100, 101, 103, 015, 107 and 109, which are made of electrically insulating material, are position between the anode segments (figure 3, column 18, lines 57-58). Wang further discloses that the cylindrical walls are fashioned to move up and down relative to the anode segments (column 30, lines 65-67). This allows adjustment of the flow pattern of the electrolyte.

10. The prior art of record is indicative of the level of skill of one of ordinary skill in the art. It would have been obvious to have fashioned the insulating dividers of Woodruff et al to move up and down relative to the anode segments as taught by Wang because the flow pattern could be adjusted. By moving the insulating dividers down a sufficient amount, the distance between the anode segments and the processing plane would have been less than the distance between the insulating members and the processing plane. Thus, the limitations relating to the relative positioning recited in claims 32, 35, 36, 50 and 54 would have been suggested by the combination of references.

11. Both Woodruff et al and Wang show arrangements of anode segments in which upper segments surfaces are substantially coplanar as recited in instant claims 37 and 57, and coplanar lower segment surfaces as recited in instant claim 38. Figure 1a of Woodruff et al suggests connecting an electrical source to each of the anode segments as recited in instant claims 39 and 53. Instant claims 41 and 42 recite limitations similar to claims 33 and 34. Depending on the positioning of the insulating dividers, electrolyte solution that is between adjacent anode segments contacts both of the adjacent anode segments as recited in instant claims 50, 52 and 56.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 703-308-2530. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on 703-308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

William Leader
September 17, 2003

ROY KING 
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700